

CLAIMS

1. An stereoscopic display device, comprising:
 - a display device for displaying a pixellated display image; and
 - 5 a stereoscopic conversion screen,
wherein the conversion screen comprises an array of light guiding members, each light guiding member being associated with an underlying pixel or sub-array of pixels, and wherein alternate rows of light guiding members are arranged to direct light from the associated pixel or sub-array of pixels to different viewing positions.
- 10 2. A display device as claimed in claim 1, wherein the light guiding members comprise optical light-tubes.
3. A display device as claimed in claim 1 or 2, wherein the array of light guiding
15 members comprises a stack of rows of light guiding members.
4. A display device as claimed in claim 3, wherein each row of light guiding members comprises an arrangement of walls of opaque material defining a plurality of channels which are each directed towards a common view point.
- 20 5. A display device as claimed in claim 1 or 2, wherein the array of light guiding members comprises a unitary screen formed from opaque material through which holes are formed at predetermined angles.
- 25 6. A display device as claimed in claim 1, wherein the array of light guiding members are defined by an electro chromic arrangement, which is switchable between stereoscopic and 2D modes of operation.
7. A display device as claimed in claim 6, wherein the electro chromic arrangement
30 comprises a plurality of electro chromic layers.
8. A display device as claimed in claim 1, wherein the array of light guiding members are defined by a radiation sensitive sheet in which exposed light channels are defined.

9. A display device as claimed in any preceding claim, further comprising a temporal multiplexing screen for directing images to different viewing locations in time multiplexed manner.

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10. A display device as claimed in claim 9, wherein the temporal multiplexing screen comprises an array of movable light guiding members.

11. A display device as claimed in claim 9, wherein the movable light guiding members are electro statically or electro magnetically controlled.

12. A display device as claimed in any one of claims 9 to 11 wherein the movable light guiding members have reflective or absorptive boundaries.

15 13. A display device as claimed in claim 12, wherein the movable light guiding members comprise microscopic fibres.

14. A display device as claimed in claim 12, wherein the movable light guiding members comprise molecules that have temporary or permanent dipoles.

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15. A display device as claimed in claim 12, wherein the movable light guiding members comprise molecules that contain magnetic elements or groups.

16. A display device as claimed in any preceding claim, further comprises a lenticular screen, comprising a array of lenses each extending in the row direction.

25 17. An stereoscopic display device, comprising:

a display device for displaying a pixellated display image; and
a stereoscopic conversion screen,

30 wherein the conversion screen comprises an array of light guiding members, each light guiding member being associated with an underlying pixel or sub-array of pixels, and wherein the light guiding members are movable to direct the output from the associated underlying pixel or sub-array of pixels to different viewing locations at different times.

18. A display device as claimed in claim 17, wherein the movable light guiding members are electro statically or electro magnetically controlled.

5 19. A display device as claimed in claims 17 or 18, wherein the movable light guiding members have reflective or absorptive boundaries.

20. A display device as claimed in claim 19, wherein the movable light guiding members comprise microscopic fibres.

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21. A display device as claimed in claim 19, wherein the movable light guiding members comprise molecules that have temporary or permanent dipoles.

22. A display device as claimed in claim 19, wherein the movable light guiding members comprise molecules that contain magnetic elements or groups.

15 23. A display device as claimed in any preceding claim, further comprising raised vertical edge strips that conceal the left and right vertical margins of the image.

20 24. A display device as claimed in any preceding claim, wherein the stereoscopic conversion screen is manually removable from the display device.

25. A display device as claimed in claim 24, wherein the stereoscopic conversion screen comprises a position adjustment arrangement.

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26. An apparatus for forming a stereoscopic conversion screen for an stereoscopic display device, comprising:

a linear array of hole-piercing members arranged at one end of a piercing shuttle, the other end of the piercing shuttle having a pivot-able mounting, the piercing members 30 being slide-able in a piercing direction with respect to the pivot-able mounting, the piercing direction changing as the shuttle is rotated about the pivot-able mounting;

first and second pivot axes about which the piercing shuttle is mountable to define different convergence points for the holes pierced by the hole piercing members.

27. An apparatus as claimed in claim 26, wherein the hole piercing members comprise mechanical piercing members.

5 28. An apparatus as claimed in claim 26, wherein the hole piercing members comprise coherent electromagnetic radiation sources.

29. A method of forming a stereoscopic conversion screen for an stereoscopic display device, comprising:

10 (i) piercing a linear array of holes using a piercing shuttle into a substrate at a first angle aligned with a parallel rotation axis, the linear array of holes being aligned in a column direction;

(ii) rotating the piercing shuttle about the rotation axis and piercing a further linear array of holes into the substrate at a second angle aligned with the parallel rotation 15 axis;

(iii) repeating steps (i) and (ii) until complete rows of holes have been pierced, each row of holes being aligned with the rotation axis;

(iv) repeating steps (i) to (iii) for a different second rotation axis thereby to provide further complete rows of pierced holes, each further row of holes being aligned 20 with the second rotation axis, alternate rows of holes being aligned with different rotation axes.

30. A method of generating an stereoscopic image, comprising:

generating a display image in which at least two sub-images are encoded into the 25 complete image, with each sub-image being provided to a plurality of rows of pixels;

displaying the complete image;

using a stereoscopic conversion screen to direct the output of different rows of pixels corresponding to the different sub-images to different viewing positions.

30 31. A method as claimed in claim 30, further comprising providing temporal multiplexing to direct images to different viewing locations in time-multiplexed manner.